

To Cite:

Riyaz M. Taxonomical description and distribution of newly recorded *Odontopera muscularia* Staudinger, 1892 (Lepidoptera: Geometridae) from the Himalayas-Kashmir (J&K UT), India. *Species*, 2022, 23(71), 207-212

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Peer-Review History

Received: 18 February 2022

Reviewed & Revised: 23/February/2022 to 17/April/2022

Accepted: 18 April 2022

Published: 20 April 2022

Peer-Review Model

External peer-review was done through double-blind method.



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Taxonomical description and distribution of newly recorded *Odontopera muscularia* Staudinger, 1892 (Lepidoptera: Geometridae) from the Himalayas-Kashmir (J&K UT), India

Muzafar Riyaz

ABSTRACT

Odontopera muscularia was first scientifically described by Staudinger as a new species in 1892 from the mountain regions of Central Asia: Margilan, Osh, The Alai, Trans-Alai and Samarkand between June to July. The distribution of the species ranges from Pakistan to Tajikistan, Kazakhstan, Kyrgyzstan and Uzbekistan. Chandra et al., (2019) reported this species as a new record to India from the Trans-Himalayan region of Ladakh UT, India. However, no such description was provided for this species besides reported as a new record to India. The present study communicates first record of *Odontopera muscularia* from the Inner Himalayan region of Kashmir valley, India with nomenclature, taxonomical description, distribution and photographs provided as well.

Keywords: *Odontopera muscularia*, Geometridae, Lepidoptera, Kashmir, Himalayas, India

1. INTRODUCTION

Geometer moths belong to the family Geometridae in the order Lepidoptera. The scientific names have been derived from Ancient Greek (*geo*=the earth, and *metron*=measure), as the larvae or inchworms of Geometer moths move along in a unique looping fashion which can appear to “measure the earth” (Heppner, 2008). Family Geometridae is among the large families of order Lepidoptera that comprises of around 23000 described species across the globe and over 1400 species from 6 subfamilies indigenous to North America alone (Ferguson, 2008). A number of geometer moths are notorious pests to many

agricultural crops. The geometer moths comprising of slender abdomens and broad wings. The hindwings appear visible, as the forewings are usually held flat which rather appear butterfly-like. Most of the moths are moderate in size with 3 cm in wingspan. A distinctive paired tympanal organs at the base of the abdomen are possessed by these moths, however they lack in flightless females (Cook and Scoble, 1992). In India, the family Geometridae constitute the second largest family of moths with around 2043 species described so far from India (Sondhi et al. 2020; Dey et al. 2021). *Odontopera* is a genus of moths in the family Geometridae described by Stephens in 1831. Parsons et al. (1999) included 59 species and 30 subspecies (inc. nominae) in the genus *Odontopera*.

During insect explorations in the Kashmir Himalayas, a few specimens belonging to different families were collected in the Tehsil Herman of District Shopian Kashmir (Fig. 1). Based on a critical study of the specimens and expert opinions received and among the collected species, the specimen *Odontopera muscularia* was collected for the first time from the Northwestern Himalayas, Kashmir valley, India. The present study hereby report this species as an addition to the fauna of Jammu and Kashmir Union Territory, India. A brief description along with photographs have been provided to facilitate easy identification of this taxon.

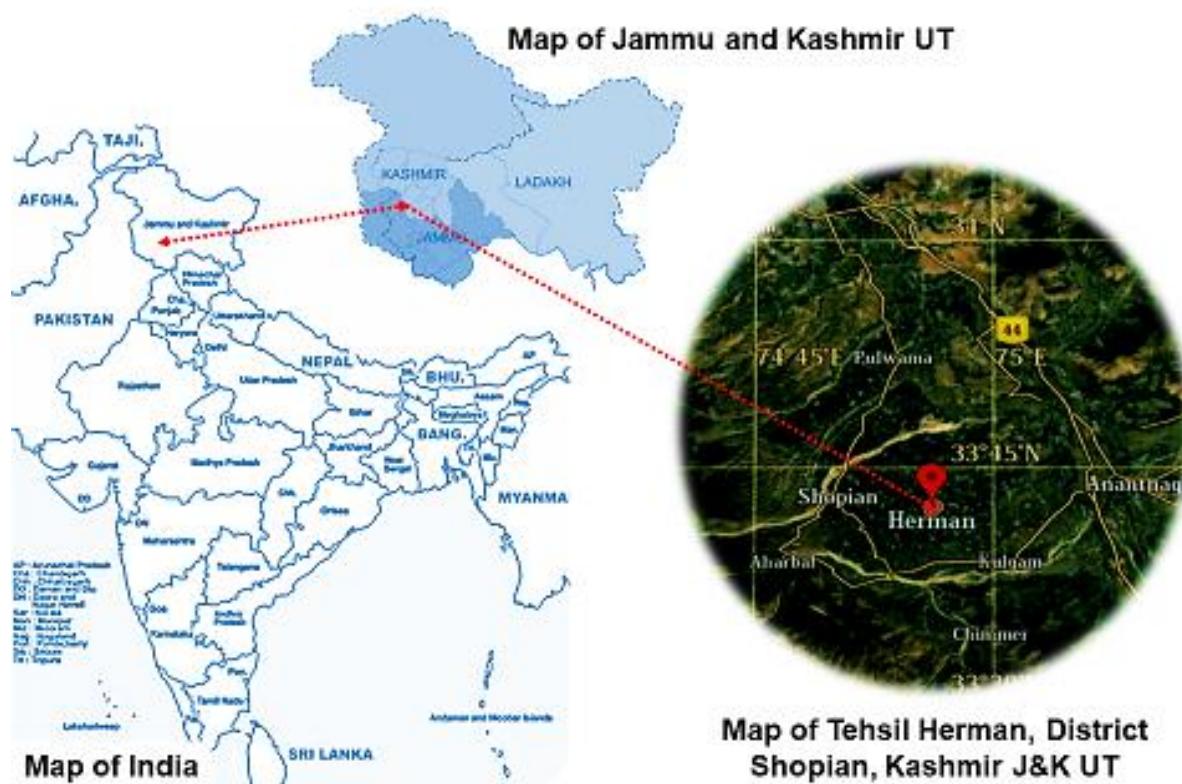


Figure 1. Map of Shopian District showing location of collection site. (Source: Google maps, 2022).

2. SPECIES ACCOUNT

Order: Lepidoptera

Superfamily: Geometroidea

Family: Geometridae Stephens, 1829

Subfamily: Ennominae Duponchel, 1845

Genus: *Odontopera* Stephens, 1831

Species: *O. muscularia* Staudinger, 1892

Distribution

India: Trans-Himalaya, Ladakh UT (Chandra et al., 2019).

Global: Pakistan, Tajikistan, Kazakhstan, Kyrgyzstan and Uzbekistan (*Odontopera muscularia* Staudinger, 1892 in GBIF Secretariat, 2021).

Active period: April to June.

Habitat: Although the species was first described from mountains, however in the present study, it was collected near the agricultural fields in Kashmir Valley. For that reason, the species might be distributed in mountain regions of the Inner Himalayas as well.

Specimen examined

INDIA, Jammu and Kashmir, District Shopian, Tehsil Herman, 33.7050N, 74.9400E, 1,596m, 31.03.2022, Muzafar Riyaz, Voucher specimen (ERIB-KMR-273).

Species description

O. muscularia (Fig. 2; A-C) Wingspan: 39-44mm; Wings dark ashy grey, faint darker sprinkled, with darker center spots and one straight dark transverse line in the outer part. The wings seem to be somewhat longer and narrower than those of the *O. bidentata*, however they are very similar with both except for the pointed apex on the outer edge prominent blunt prongs, but are otherwise on the latter not even born in *O. muscularia*. They are very monotonous in typical species with dark-ash colored or less, as well as finer (hardly noticeable) sprinkled dark. The rounded dark central spot is (on all wings) faintly pitted; otherwise, there is only one that runs almost straight dark transverse line in the outer edge part. Sometimes, it is the same and often caused by short white lines cut through in some species. However, it is sharply delimited externally by a white transverse line. In case of *O. bidentata*, this transverse line is somewhat curved and very faint jagged, the white transverse lines are usually more numerous and larger in the same. The usual in this species strongly appearing, somewhat jagged dark and extrabasal is case of *O. muscularia* and is so distinct that, it is often not recognizable at all. On the slightly lighter gray sleeves runs the dark transverse line also somewhat straighter and is usually somewhat upright further away from the center. The underside of all wings is slightly lighter gray; more heavily and densely sprinkled dark, with more prominent dark central spots and mostly faded dark transverse lines.

A



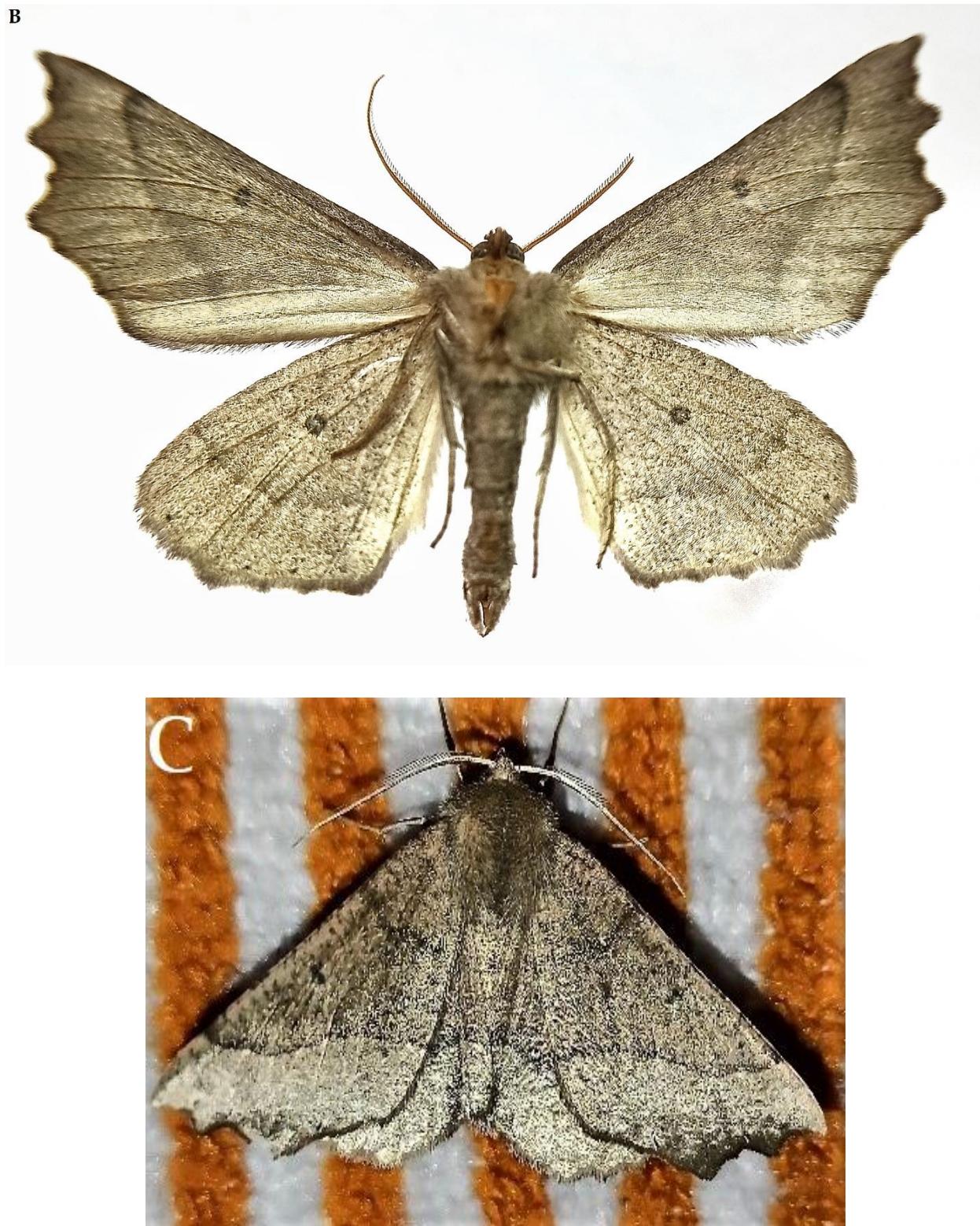


Figure 2. A. Dorsal view of the *O. muscularia*; B. Ventral view; C. Live photograph of the specimen (*Mounted and photographed by Muzafar Riyaz*)

3. CONCLUSION

North-western Himalayas, mainly the Kashmir region is one of the major biodiversity hotspots of India. The region is rich in both flora and fauna and the revision of the insects especially the moths in the region have been not been well documented in the recent

past besides aided by some old checklists from British India and authors of the different parts of India as well (Zanit et al., 2022; Riyaz et al., 2021, Riyaz et al., 2021). A high elevation is been observed in endangerment and extinction of both flora and fauna in the present millennium and the introduction of species is contributing a major threat to biodiversity. With these short notes and mini-revisions of the plant species, many young researchers will come forward to travel around the unexplored areas of the Kashmir Himalayas as new many species await discovery.

Acknowledgement

The author wishes to thank Entomology Research Institute, Loyola College, Chennai, India for extended support and guidance and Idea Wild (USA) for field equipment.

Ethical approval

Odontopera muscularia Staudinger, 1892 (Lepidoptera: Geometridae) was collected from the Himalayas-Kashmir (J&K UT), India.

The ethical guidelines for plants & plant materials are followed in the study for sample collection & identification. The species was collected & identified with the help of Entomology Research Institute, Loyola College, Chennai, India for extended support and guidance and Idea Wild (USA).

Funding

This study has not received any external funding.

Conflicts of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

- Chandra, K., Kumar, V., Singh, N., Raha, A. and Sanyal, A. K. 2019. Assemblages of Lepidoptera in Indian Himalaya through Long Term Monitoring Plots: 1-457. (Published by the Director, Zool. Surv. India, Kolkata).
- Cook, M. A., and Scoble, M. J. 1992. Tympanal organs of geometrid moths: a review of their morphology, function, and systematic importance. *Systematic Entomology*, 17(3), 219-232.
- Dey, P., V.P. Uniyal, A. Hausmann & D. Stüning. 2021. Revision of the genus *Prometopia* Hampson, 1902, with description of the new species *P. joshimathensis* sp. nov. from West-Himalaya and its subspecies *P. j. yazakii* ssp. nov. from Nepal (Lepidoptera: Geometridae, Ennominae). *Zootaxa* 4980(1): 28-44.
- Duponchel, P.A.J. (1844[-1846]) Catalogue Methodique des Lepidoptères d'Europe. Paris, 553 pp.
- Ferguson, D.C. 2008. Geometroidea: Geometridae (part): Ennominae (part) — Abraxini, Cassymini, Macariini. In: Dominick RB, Ferguson DC, Franclemont JG, Hodges RW, Munroe EG, editors. Fasc. 17.2. In *The Moths of America North of Mexico*. Washington, D.C.: Wedge Entomological Research Foundation. 576 p.
- Heppner, J.B. 2008. Geometer Moths (Lepidoptera: Geometridae). In: Capinera J.L. (eds) *Encyclopedia of Entomology*. Springer, Dordrecht.
- Iyer, G., D. Stüning and S. Sondhi. 2021. An inventory of geometrid moths (Lepidoptera: Geometroidea: Geometridae) of Kalakad-Mundanthurai Tiger Reserve, India. *Journal of Threatened Taxa* 13(13): 19887-19920. <https://doi.org/10.11609/jot.7105.13.13.19887-19920>
- Odontopera muscularia* Staudinger, 1892 in GBIF Secretariat (2021). GBIF Backbone Taxonomy. Checklist dataset <https://doi.org/10.15468/39omei> accessed via GBIF.org on 2022-04-08.
- Parsons, M. S., Scoble, M. J., Honey, M. R., Pitkin, L. M. & Pitkin, B. R. 1999. The catalogue. In Scoble, M. J. (ed.), *Geometrid moths of the world: a catalogue (Lepidoptera, Geometridae)*. The Natural History Museum, London, CSIRO Publishing, Apollo Books, Collingwood/Australia, Stenstrup/Denmark, 1016 pp.
- Riyaz, M., Ignacimuthu, S., Shah, R. A., Sivasankaran, K., & Pandikumar, P. 2021. Ethnobotany of the Himalayas—Kashmir, India. In *Ethnobiology of Mountain Communities in Asia* (pp. 27-45). Springer, Cham.
- Riyaz, M., Mathew, P., Shiekh, T., Ignacimuthu, S., & Sivasankaran, K. 2021. First record of the Afghan Poplar

Hawkmoth *Laothoe witti* Eitschberger et al., 1998 (Sphingidae: Smerinthinae) from India: a notable range extension for the genus. *Journal of Threatened Taxa*, 13(7), 18943-18946.

12. Sondhi, S., D. Nath, Y. Sondhi & K. Kunte. 2020. A new species of *Metallolophia* Warren, 1895 (Lepidoptera: Geometridae: Geometrinae) and notes on *M. opalina* (Warren, 1893) from eastern Himalaya, India. *Zootaxa* 4838(2): 289–297.

13. Staudinger, O. 1892. Neue Arten und Varietäten von palaearktischen Geometriden aus meiner Sammlung. *Deutsche entomologische Zeitschrift, Iris*, 5, 164-166.

14. Stephens, J. F., 1831. Illustrations of British entomology (Haustellata), vol. 3. London.

15. Stephens, J.F. 1829. The nomenclature of British insects; being a compendious list of such species as are contained in the Systematic Catalog of British insects. Baldwin, London, 68 pp.

16. Vasilenko, S.V. To the knowledge of the fauna of geometrid moths (Lepidoptera: Geometridae) of Tajikistan. *Cauc. Entomol. Bull.* 2019, 15, 347–354.

17. Zanit, S.B., Mochi, S.A., Riyaz, M. 2022 Taxonomic diversity and Ethnobotany of genus *Solanum* (Solanaceae) alongside Pir Panjal gradient, North-western Himalayas-Rajouri (J&K UT), India. *Species*, 23(71), 86-93.